Botanical Gazette.

Vol. VII. AUGUST & SEPTEMBER, 1882. Nos. 8 & 9.

Editorial.—Mr. Joseph F. James has written a pleasant memoir of Chas. Darwin, which has been published in the Journal of the Cin. Soc. Nat. Hist.

Rev. A. B. Hervey sends word of the death of Dr. G. Dickie, F. L. S., of Aberdeen, Scotland, a well known British Algologist, which occurred July 15th.

Mr A. C. Palmer, in the *Am. Monthly Micr. Jour.*, calls attention to the fact that *Naias flexilis* furnishes a fine illustration of cyclosis, even better than the stock examples, *Vallisneria* and *Anacharis*.

A correspondent, referring to Mr. Arthur's note on page 88 of the last Gazette asks: "Is Mr. Arthur quite sure that rats, or other vermin, had not carried the crab apples under the stone and left the seeds?"

F. Reinitzer propounds the theory that transpiration is an injurious agent, a necessary evil, in the life of the plant. This view he founds on the fact that transpiration exercises a retarding influence on growth.

M. Alph. DeCandollé has just distributed a small pamphlet containing two papers; the first "Sur un Caractere de la Batate," and the other "Observation de M. Meehan sur la Variabilite du Chene Rouvre (*Quercus Robur*) et Remarque de M. Alph. DeCandolle."

Rev. E. L. Greene, in the *Torrey Bulletin* for September, describes seven new Californian *Compositæ*, four of which belong to the genus *Hemizonia*. Mr. Greene is coming rapidly to the front as a publisher of new species and his work among our western plants has been invaluable.

Karl Richter has determined that the substance of the cell-wall of Fungi fails to display the ordinary reactions of cellulose because of the intimate mixture of the cellulose with a foreign substance which he eliminated by treating for a prolonged period with potash and washing with a weak acid, after which the blue coloring with chloriodide of zinc is obtained.

The "cucumber odor" of the water which has been troubling Boston so much, has been traced to the presence, not of plants,

but of a fresh water sponge. The Nostocs must still stand responsible for the "pig-pen" odor, but the "cucumber odor" we hand over to zoologists.

MR. FOERSTE, of Dayton, Ohio, writes that he has received a postal card from Mr. Wm. Trelease saying: "I have noticed protogyny in *Thaspium aureum* and *Sanicula*, so I no longer have any doubt as to the accuracy of your observations on *Erigenia*, though the fact of this sort of dichogamy occurring in *Umbelliferæ* was entirely unexpected from the uniformity of protandry in the earlier studied genera.

THE PROCEEDINGS of the Davenport Acad. of Nat. Sci., Vol. III, Part II, are at hand. The botanical articles are by Prof. J. C. Arthur and Dr. C. C. Parry. The former makes still farther addition to his catalogue of Iowa Plants; while the latter describes two new species of *Oxytheca* from Southern California. The new species are named *O. caryophylloides* and *O. Parishii* and were both discovered by the brothers Parish in the San Bernardino Mountains.

ON PAGE 78 of the July GAZETTE it might be inferred that Baillon's work among the *Compositæ* was thought more commendable than even that of Mr. Bentham. No reader of the GAZETTE should labor under such a delusion. Because Mr. Bentham with immense labor has worked up the vast order and acknowledged 780 genera, and Baillon, putting a good part of the genera shown to be near into one, reduces the number to 403, is no indication that the work of the latter is either "philosophical or practically convenient," for it is very easy work to do.

PROF. HENRY G. JESUP, of Dartmouth College, has published a very handsome pamphlet entitled "Flora and Fauna of Hanover, N. H." The list of plants includes the flowering plants and higher cryptogams, just such as are included in Gray's Manual. The range includes the flora within thirty miles radius of the town of Hanover and contains a great diversity of conditions, such as mountain peaks, valleys, and lakes, and, as is to be expected, the list is an exceptionally rich one. The summary shows a total of 1008 species, of which 286 are *Polypetalæ*, 265 *Gamopetalæ*, 96 *Apetalæ*, 52 Cryptogams Introduced phænogams number 144.

MR. J. M. MACFARLANE, Demonstrator of Botany in the University of Edinburg, finds a new factor in the vegetable cell, which he proposes to call the *nucleolo-nucleus*. It is a well marked body inside the nucleus, round or slightly oval in outline, aud exhibits a clear bounding wall differentiating it from the substance of the nucleolus. It was first seen in the epidermal cells of *Ornithogalum pyramidale*, after staining fresh epidermis with a ¼ per cent. solution of eosin in common methylated spirit, and was afterwards found in many other Phanerogams and also in some Cryptogams. Mr. Macfarlane concludes that the nucleus, nucleolus and nucleolo-nucleus are invariably present, *if the cell is still active*.

PROF. J. C. ARTHUR reports a very successful session of the Summer School at the University of Minnesota. There were forty students at work in the botanical laboratory and all were enthusiastic, as might be expected. For the benefit of botanists who suppose that some distant locality furnishes better illustrations for study than home plants, and who so often connect the lower forms with something distant and unattainable, we quote the following from Prof. Arthur's private letter:

"We found *Chara* wherever we went. There was an equal profusion of *Nostocs*, and *Desmids*. *Nitella*, *Vaucheria*, *Volvox*, *Hydrodictyon* and *Mesocarpus* were specially abundant. Numerous large and handsome slime-moulds were found on the side-walks, and we were also able to study every stage of the polymorphous *Puccinia*, even to the germination of the teleutospores."

THE CURRENT "PART" of the Proceedings of the Philad. Acad. Sci. contains two papers of botanical interest, both by Mr. Thos. Meehan, whose restless eyes and pen are ever observing and recording. In one of them is recorded the fact that *Salisburia adiantifolia* is sometimes hermaphrodite; while in the other, which is a much more formal paper, are recorded some observations on the relation of heat to the sexes of flowers, based chiefly on a study of the maple and which concludes with the following generalizations:

Male flowers do not appear on female maple trees till some of its vital power has become exhausted.

Branch-buds bearing female flowers have vital power sufficient to develop into branches.

Branch-buds bearing male flowers have not vital power enough to develop into branches, but remain as spurs which ever after produce male flowers only.

Buds producing male flowers only are more excited by heat than females, and expand at a low temperature, under which the females remain quiescent.

PROF. H. BAILLON, wishing to germinate some seeds of walnut and almond trees in winter, thought to obtain a more rapid development in a warm house in which the temperature varied during the twenty-four hours from 15° to 25° (59–77 F.) than in a cool house in which the daily variation was between 5° and 15° (41–59 F.), but the trial failed. In the cool house in the course of six weeks the walnuts had stems of about two decimeters in height, while the most advanced in the warm house had stems of only two or three centimeters. At the end of two months and a half the seeds growing in the warm house had roots only occasionally well-developed, but little or no caulome outside the fruit. When walnuts were germinated in a warm house with "bottom heat" the tap roots were early arrested in their development though growing in a very friable soil consisting of moist sawdust; whereas when germinated in a cool house, without bottom heat, the tap roots grow well in length before the egress of the plumule. The same results were obtained

with almonds, thus seeming to show that with some seeds nothing is to be gained by forcing them.

PROF. EMERSON REYNOLDS, F. R. S., has lately shown that well-marked differences in physiological activity between metameric bodies of comparatively simple constitution can be detected with aid of plants. Ammonium sulphocyanate and its metamer, theocarbamide, both compounds rich in nitrogen and easily soluble in water, were selected for experiments during the summer of 1882 upon plants of *Nicotiana longiflora*. From August to the end of November a certain number of plants were watered with rain water, and a certain number with the compounds in solution. The following table shows the chief results:

	Rain-water.	Theocarbamide.	Sulphocyanate.
Total height in inches.....	31	23	12
No. of leaves.....	15	14	13
Maximum length of lvs.....	9 5	15.25	8
Maximum breadth of lvs.....	4.25	6	2.5
No. seed pods.....	9	15	0
Ditto well-developed...	1	11	0

It would thus seem that the particular elements of which a body is composed exert less influence on its physiological activity than the method in which the component atoms are grouped.

Some New Grasses.—MUHLENBERGIA SETIFOLIA.—Culms erect, 1½ to 2 ft. high; radical leaves numerous, 4 to 6 inches long, setaceous, involute, recurved at the tips, those of the culm 2 or 3 and similar; stipules membranaceous, acute; sheaths 4 to 6 inches long, smooth; panicle 4 to 5 inches long, narrow, erect, branches of panicle erect, filiform, in twos or threes, about 1 inch long, once or twice dividing near the base and each with 2 to 4 flowers mostly on short filiform pedicels; outer glumes minute, less than one line long, oblong, obtuse, scarious, erosely toothed at the apex; flowering glume 2 lines long, with a short thick callus, obscurely 3-nerved, smooth, lanceolate, acuminate, terminated with a slender awn twice or thrice its own length; palet of same texture and nearly equal length, 3-nerved.

Collected on the Gaudalupe Mountains of Western Texas by *Dr. V. Havard*, of the U. S. Army.

MUHLENBERGIA GLOMERATA, var. BREVIFOLIA.—Culms 1½ to 2 ft. high, erect and leafy, leaves (5-8 on each culm) rigid, short and wide (2-4 inches long, 2-3 lines wide), somewhat scabrous; panicle spikelike, interrupted and with longer branches below; glumes and palets about equal in length (1 line), glumes acuminate, scabrous-puberulent; flowering glume acuminate and tipped with an awn half its length or less, 3-nerved, pubescent below; palet acute, about equaling the flowering glume.

Collected in S. E. California by *Mr. S. B. Parish.*

MUHLENBERGIA SYLVATICA, var. CALIFORNICA.—This grass has the spreading, diffusely branched habit of *M. sylvatica*, and should probably be ranked as a marked variety of that species.

The narrow panicles terminate the long, leafy, terminal and lateral branches, are 4 to 6 inches long, the rays mostly alternate, the lower ones distant and subspicate, some of them 1 inch long, the spikelets sessile and crowded on the branches; the outer glumes membranaceous, except the hispid green keel, equal, lanceolate, acuminate, scarcely 2 lines long, rather exceeding the flowering glume without its awn; flowering glume about 1½ lines long, firm, finely scabrous, acute, and terminating in a straight awn about its own length, sparingly villose at the base; palet about as long as its glume, acute.

Collected on the San Bernardino Mts., California, by *Mr. S. B. Parish.*

Notulæ Californicæ.—The fact has hitherto been strangely overlooked by Californian botanists, or at least, it has been mentioned by no one, that the most common *Convolvulus* of California has the character of an evergreen shrub, often ascending trees to the height of twenty feet, and showing great lengths of woody, grape-vine like stems frequently near an inch in diameter. The species is *C. occidentalis*, Gray, supposed by that author to be an herb like *C. sepium*, L., to which it is, in floral character, closely related. The young plants are indeed wholly herbaceous, and when only these are seen, trailing over the ground, or supported on low bushes and flowering profusely, it may easily pass for a mere herb. I have admired almost daily for a year past a beautiful specimen which grows by a brookside in the midst of the village of Berkeley, and only very recently did it occur to me as singular that a *Convolvulus* so much like common bind-weed should be displaying its festoons of leaf and flower from only the very topmost branches of a tree twelve or fifteen feet high, and that during the whole year. The examination thus suggested to my mind brought to light the dark-barked, lithe and tortuous woody stems which, in no wise attached to the trunk of the tree, rose from the ground directly up to the lower branches, after the manner of wild grape-vines; and this, now that my attention has been called to the fact, I find to be the universal habit of the species, except in the case of plants only two or three years from the seed. The most luxuriant growth of this plant which I have met with is on Goat Island in San Francisco Bay.

On the northern slope of this mountain island is an extensive grove of live oak (*Quercus agrifolia*) of rather small size; but many of these trees have their crowns completely and beautifully mantled, so that their own foliage is hidden, by the masses of the shrubby morning-glory whose corollas are here, as I have seen

them no where else, of a rich purplish hue. On the mainland they are apparently always cream-colored.

Convolvulus arvensis, L., a foreigner, is already more abundant throughout the region of San Francisco Bay than any other species, and is a very troublesome weed in the wheat fields. At the time of my writing the stubble fields are white every morning with its flowers, for it persists in growing and blooming however closely cut down by scythe and sickle.

No species of the cruciferous genus *Cakile* appears yet to have been reported from any Pacific shore. But what appears to be *C. Americana*, Nutt., is abundant on the beach at West Berkeley. Its only associates there are the indigenous Abronias, Franserias, and the like Pacific Coast maritime species, yet in all probability it is an introduced plant.

Chrysanthemum segetum, L., a plant nowhere mentioned as even adventive on this continent, has become thoroughly established in fields and by waysides a few miles north of Berkeley. Being an annual, and well able by its seeds to survive the half year's drouth, it may possibly become the troublesome weed in California which its sister species, *C. Leucanthemum*, L., has long since become at the East.

Picris echioides, L., the type of an Old World genus allied to *Crepis*, from which it differs in having a plumose pappus, grows wild in great abundance near Vallejo. *P. hieracioides*, L., common in Australia, is the only other species of this rather large genus which seems to have obtained a foothold in any part of the New World, and is the only one which would have been expected to establish itself in California. But this which runs wild on even the uncultivated hills, almost choking out the indigenous tarweed, is certainly the well marked *P. echioides*, new to our continent, and perhaps destined to be troublesome as a coarse weed.—EDWARD LEE GREENE, *Berkeley, California*.

Parishella Californica.—To the scientific botanist there is no more interesting genus than Nuttall's *Nemacladus*; and I will remember the satisfaction I had when (in the year 1875) I detected its affinities with the *Cyphieæ* of South America and South Africa. More recently I had the pleasure to describe a second species of this curious genus. In botanizing this last spring upon the Mohave desert, those sharp-sighted botanists and most obliging and excellent correspondents, the brothers Parish, of San Bernardino, California, had the rare fortune to discover a little plant, which upon examination proves to be a new genus of this group. I wish here merely to say that I have taken the opportunity thus afforded to dedicate it to the discoverers, in token of my appreciation of the very valuable services which they have rendered, and are zealously rendering to botany and to botanists. Without here entering upon a formal description, I can mention the distin-

guishing characters of this little plant. It is more humble than *Nemacladus* in that it spreads upon the ground, rising little above its surface, but forming depressed tufts; but its white flowers are comparatively conspicuous. Besides its peculiar habit and its rosulate tufted spatulate leaves, the new plant differs from *Nemacladus* mainly in its almost rotate and equally 5-cleft corolla, which is shorter than the foliaceous lobes of the calyx; in the tube of the latter being adnate up to the summit of the ovary; and in the dehiscence of the capsule by an operculum, the short conical apex separating by circumcision.

There is already a genus *Parishia*, an East Indian tree; so this little herb must take the name in an altered and diminutive form. The specific name might have been chosen from the desert habitation or some characteristic feature of the plant; but it is fitting to associate it with the name of the State in which the Messrs. Parish reside, and the botany of which they have most largely helped to make known.—ASA GRAY.

Notes from Canada.—Having in the latter part of June, made a collecting tour with my friends, Professor Macoun, Dominion Naturalist; Mr. Wm. Saunders, Editor of the Canadian Entomologist; and Mr. James Macoun, to Point Pelee, Essex Co., Ontario, the most southern point on the mainland in Canada, a list of the rarer plants found there might not be void of interest to some of the readers of the GAZETTE. The list is chiefly remarkable for the southern nature of most of the species enumerated, some of them so much so, that I had not dreamed of finding them within our boreal confines. To this locality never before having been thoroughly explored, may be attributed the seemingly extraordinary fact, that of the plants mentioned, the first eleven have not, I believe, been heretofore recorded as found in Canada, while the remaining ten have but very rarely been noted.

Corydalis flavula, DC.	Smilax tamnoides, L.
Hibiscus Moscheutos, L.	Asimina triloba, Dunal.
Ptelea trifoliata, L.	Sisymbrium canescens, Nutt.
Gleditschia triacanthos, L.	Cerastium oblongifolium, Torr.
Opuntia Rafinesquii, Eng.	Phascolus helvolus, L.
Nyssa multiflora, Wang.	Baptisia tinctoria, R. Br.
Ipomœa pandurata, Meyer.	Galium pilosum, Ait.
Fraxinus quadrangulata, Mx.	Vernonia fasciculata, Mx.
Morus rubra, L.	Acerates viridiflora, Ell.
Quercus palustris, Du Roi.	Fraxinus viridis, Mx. f.

Quercus Prinus, L.

The large size and plentitude of the Papaw, Mulberry, Blue Ash, and Sour Gum trees clearly show them to be indigenous, and would indicate that they are not merely chance survivors, but that the soil and climate fully meet their requirements.

I might add, that during the week preceding our trip, Professor Macoun had found along Lake Erie, at Amherstburg, Pelee Is-

land, and in the neighborhood of Port Stanley, the following plants, no less than eight of which also now for the first time find a place in Canadian Flora. The coffee-tree, he tells me, was seen reaching two feet in diameter.

Viola cucullata, Ait. var. palmata, Gr.	Thaspium trifoliatum, Gr.
Euonymus atropurpureus, Jacq.	Thaspium barbinode, Nutt.
Gymnocladus Canadensis, Lam.	Cynthia Virginica, Don.
Agrimonia parviflora, Ait.	Chærophyllum procumbens, Crantz.
Geum vernum, T. & G.	Tecoma radicans, Juss.
Rosa setigera, Mx.	Plantago cordata, Lam.
Cratægus subvillosa, Schrader.	Prosartes lanuginosa, Don.
Heuchera hispida, Pursh.	Carex Steudelii, Kunth.

Carex Grayii, Carey.

—T. J. W. BURGESS, M. D., *London, Ontario, Canada.*

Some Alaska Ferns, with notes.—Dr. J. Schneck has kindly placed in my hands his entire stock of duplicate ferns, among them the following Alaskan species, a record of which may be interesting. They were all collected by Mr. L. M. Turner during the seasons of 1879–80–81.

1. *Ophioglossum vulgatum.*, L. Specimens exhibiting marked variations in the shape of the laminæ, the most noticeable being a broadly, triangular-ovate form with an abruptly acute apex. Sporangia varying from 10 to 20, or more, in number.

2. *Botrychium boreale*, Milde. Specimens showing nearly the range of forms described by Angstrom (Botan. Notiser, 1866, and quoted by Milde in Botrychiorum Monographia), viz:—*evolutum*, *intermedium* and *affine*. As these, and the next specimens, have furnished me with much new material for examination, I shall have more to say of them hereafter in connection with their vernation.

3. *Botrychium Lunaria*, Swz. A large number of fine specimens showing many forms running from the normal form (var. *normale*, Roper) through var. *sub-incisum*, Roper, and var. *incisum* Milde, toward, though not quite reaching var. *ovatum*, Milde. The collection furnishes two interesting examples of forked rootstocks. In one specimen the rootstock had made three short branches, two of which had developed buds and given rise each to a perfect frond, thus forming a double-fronded plant. In the other, and larger of the two specimens, the rootstock had divided into two longer divisions each bearing a well-developed frond. Examining the vernation in this specimen I found that the base of each stipe contained a perfect bud showing no variation from the normal development. Milde (l. c.) described similar examples in this species, and in *B. simplex*, and, as of rarer occurrence, in the present species, and *B. boreale*, instances where the bud which should not have developed until the next year had broken through the base of the stipes and developed into a perfect frond so that two individuals appeared close together from one rootstock in the same season.

4. *Botrychium lanceolatum*, Angstrom. Specimens fleshy but not showing any marked variation.

5. *Botrychium ternatum*, Swz. Specimens variable, most of them nearer the *obliquum* form than the type, and very fleshy.

6. *Botrychium Virginianum*, Swz. Specimens (2 in number) small, but one of them especially interesting, having two perfect fronds from the same rootstock. In this instance it is clearly apparent from the manner in which the base of the stipe of one frond sheathes the base of the other, that the bud which should not have developed until another year had pushed out prematurely and developed soon after the regular frond. The two individual fronds had grown to very nearly the same height and dimensions. The bud for the third year's growth lies snugly tucked away in the vertical slit at the base of what should have been the second year's frond, and a repetition of the condition described could not have been expected another season as in the instances mentioned in *B. Lunaria*, where the branched rootstock had made the permanent existence of two individuals possible.

7. *Polypodium vulgare*, L. A single small plant.

8. *Cryptogramme acrostichoides*, R. Br. A large number of fine specimens among which I find two fronds partly fertile and partly sterile, the two lowermost pairs of pinnæ being wholly sterile in one, and with a few scattered sori in the other; the upper portion of both fronds being contracted in fruit exactly as in the other fertile fronds.

9. *Asplenium Filix-fœmina*, Bernh. A single small frond.

10. *Phegopteris Dryopteris*, Fee. Specimens characteristic, but the fertile somewhat more rigid than usual.

11. *Aspidium Lonchitis*, Swz. Specimens mostly small, but characteristic. A single double-fronded specimen occurs caused by the cohering together of the bases of two stipites.

12. *Aspidium Oreopteris*, Swz. Specimens collected late, and not in good condition.

13. *Aspidium spinulosum*, Swz. A large number of specimens mostly of the *dilatatum* form.

14. *Cystopteris fragilis*, Bernh. Specimens showing the usual variations so characteristic of the species. A single frond forks above the lowermost pair of pinnæ into a two-branched top.—GEO. E. DAVENPORT, *Medford. Mass.*

The Postage Question.—WASHINGTON, D. C., July 1, 1882.
EDITOR BOTANICAL GAZETTE:

Dear Sir—The note of Mr. Trelease on "The Postage on Botanical Specimens," published in your June number (p. 73), still leaves the question open as to what kind of labels will be allowed to go with the specimens, many supposing

that so far as botanists are concerned, the old liberal ruling is still in force, and that the statement on page 234 of the "Guide to the Flora of Washington and Vicinity," was wholly incorrect. While for one I should only be too glad if this were the case, I still presume that the chief desire of all botanists is to know precisely how the laws are construed by the Post Office Department at the present time, and with this object in view I have not only revisited the Department, but have corresponded officially with it, and if not trespassing too largely upon your columns, I would be glad to have the correspondence published. It seems to cover the whole ground and may render further inquiries unnecessary.

I desire to say, however, in advance, that the statement in my flora was too strong and really inaccurate, and especially, that the word "third-class" was an error for *fourth-class*, which was overlooked in reading the proof.

Very truly yours,
LESTER F. WARD.

NATIONAL MUSEUM,
WASHINGTON, D. C., June 21, 1882.

HON. TIMOTHY O. HOWE, Postmaster General:

Sir—I enclose a leaf from Bulletin, No. 22, of the National Museum, of which I am the author, upon which [p. 234] are marked passages relating to the sending of written labels with botanical specimens.

Since the publication of the Bulletin the Department has been asked whether the statements therein were correct, and has replied by sending copies of the Postal regulations of February 21. 1881, and calling special attention to the 7th exception by underscoring the word "name" on the last line but one, which action has been published in the BOTANICAL GAZETTE (June 1882, p. 73).

The impression seems to prevail that this exception will apply to botanical labels made out in the usual way, of which three samples are inclosed within.

As labels without *authority*, *locality*, or *date*, are of no scientific value it is supposed that these would be construed as necessary "for purposes of identification," and therefore legal.

You are respectfully requested to state whether the Department so construes the regulation, and if not, to indicate such portions of the inclosed labels as would be illegal, and to return the same for the information of the profession, who, rest assured, need only to know the law in order to comply with it.

Very respectfully,
Your obedient servant,
LESTER F. WARD.

POST OFFICE DEPARTMENT,
OFFICE OF FIRST ASS'T POSTMASTER GENERAL,
WASHINGTON, D. C., June 24, 1882.

LESTER F. WARD, ESQ., National Museum, Washington, D. C.:

Sir—Your communication of the 21st inst., addressed to the Postmaster General, has been referred to this office for reply.

The labels submitted by you, so far as they contain simply the name of the plant, and as necessary to fix that name, the name of the person making the classification, adding, as part of the name, the variety, and the name of the person classifying, will be held to be within the language of the Statutes. But it is impossible, by any fair construction, to authorize a statement of the kind of soil in which the plant grows, or the locality from which it comes, or the date at which the plant is obtained, or the date at which it flowers, or yields fruit.

All these descriptive matters might be placed upon the label, by the use of a gelatine pad, thus making a reproduction of the matter; or, by the use of a hand stamp. You are respectfully referred to Rulings 319 and 320, January Postal Guide, 1882, page 719, a copy of which guide will be sent to you, through the Post Office.

Your labels and communication are respectfully returned.

Very respectfully,

E. C. FOWLER,
For First Assistant Postmaster General.

Decumaria barbara.—On May 29th of this year, in company with Dr. Frank Baker, I paid a brief visit to the Dismal Swamp of Virginia. My principal object was to find if possible that handsome vine, *Decumaria barbara*, L., which I had seen in the swamp in 1876, when, in company with Prof. Chickering and Mr. Morong, I had enjoyed a three days' sojourn in that wilderness of amber-colored waters.

As on that occasion the plant was not seen till we had penetrated far into the swamp on what is known as the Jericho Canal to near the open lake, and as on the present one, starting from Bowers Hill Station on the Seaboard & Roanoake R. R., we could only find ditches that would lead us in a distance of about two miles, we were by no means sanguine of success. But successful we were, and found many large and beautiful vines climbing the great gum trees. They were in full bloom and the problem was to reach the flowers.

As your readers probably know, this vine climbs by means of fine rootlets, after the manner of *Rhus Toxicodendron*, which it much resembles in many other respects, and with which it vies in the Dismal Swamp for the posession of the finest supports. To climb to the lowest flowering branches was impossible, and after reaching the verge of despair, the thought struck us of severing a

vine at the base, and, by detatching it for a long distance from the tree to which it clung, to bring down, if possible, the flower-bearing portion. Though a barbarous proceeding we nerved ourselves to it and our efforts were crowned with abundant success.

This plant, as your readers all probably know, is not described in Gray's "Manual," fifth edition, but whether its discovery in the Dismal Swamp in 1876, on the occasion above mentioned, was its first appearance north of the southern boundary line of Virginia, I do not know. However that may be, I thought it might interest some to know that it had been found at the northern border of the swamp and within ten miles of Norfolk.—LESTER F. WARD.

Proterogyn in Sparganium eurycarpum.—In a marsh near the Eastern Branch of the Potomac I found a few days since the finest patch of *Sparganium eurycarpum* that I ever saw, the developed white blossoms being conspicuous from a distance. On approaching and examining them I perceived that the plant was very obviously proterogynous. The two distinct states were so clearly marked that they gave the appearance of two kinds of plants. Those on which the fertile heads were developed and the stigmas ready to receive pollen invariably had all the staminate heads undeveloped, while those in which the staminate heads were developed had in all cases commenced to form fruit. Still a third state occurred in which anthesis was entirely past in both kinds of heads and large heads of fruit had formed. While the order of development of the pistillate and staminate heads was always the same, abundance of plants existed in both states, so that fertilization was possible, yet a careful search failed to reveal a single plant in which the time of expansion of the male and female flowers was synchronous—*i. e.*, in which self-fertilization could have taken place.—LESTER F. WARD.

Contributions to North American Botany, by Asa Gray; Proc. Am. Acad. Vol. XVII.—It is almost impossible to appreciate the amount of labor represented by this contribution. In his elaboration of the vast family of *Compositæ* as displayed in North America, Dr. Gray's work has been of the most laborious and intricate kind. No living botanist could have conducted us half so well through such a bewildering maze of forms and synonyms, and the consultation of type specimens in the older herbaria has not in all cases shed a flood of light. Probably *Aster* and *Solidago* are two of the most vexatious genera of this great family as all botanists will testify in whose herbaria are lurking many unplaceable forms. The first part of this paper is devoted to the record of some of the results of the study of these difficult genera in the older herbaria and their difficulty can best be appreciated when Dr. Gray, who has seen more type-specimens of the species and has given more time to the systematic study of these genera than any one testifies

that "in certain groups absolute or practical definition of the species by written characters or descriptions is beyond my powers." The greatest confusion seems to have arisen from the fact that many old species were established upon cultivated plants and others upon a perfect medley of forms, which being resolved leaves nothing behind upon which to establish a species and a name must be suppressed. For instance, *Aster Novi-Belgii*, L., disappears, being swallowed up completely by neighboring species; which is also the case with *A. miser*, L., and *A. Tradescanti*, L., although in this last case the old name claims a small share, the rest all disappearing under *A. paniculatus* Lam., and *A. vimineus*, Lam. The name *A. linifolius* subsides from the American Flora, and so it goes, until in the forthcoming work on *Compositæ* it will take us many a day to get the run of our Asters.

As for *Solidago*, which now numbers nearly 80 species in North America, Dr. Gray gives a general arrangement under the three sections VIRGAUREA (which is made to include the old *Chrysastrum*), EUTHAMIA, and CHRYSOMA. Under the first section the species are arranged in five groups, *Squarrosæ* (§ *Chrysastrum*, T. & G.), *Glomerulifloræ*, *Thyrsifloræ*, *Paniculatæ*, and *Corymbosæ*. But few of the changes can be noted. For example, *S. thyrsoidea*, E. Meyer, becomes *S. macrophylla*, Pursh; the vars. *multiradiata* and *humilis* of *S. Virgaurea* are acknowledged as species; *S. virgata*, Mx., falls under *S. stricta*, Ait.; the *S altissima* of the Manual is *S. rugosa*, Mill., *S. Muhlenbergii*, T. & G. comes under *S. arguta*, Ait.; and *S. gigantea* is but a variety of *S. serotina*.

In the same contribution are the descriptions of many new species, mainly from Arizona and adjacent districts. A new buckeye from Lower California is an interesting discovery and many well-known genera receive large additions. A synopsis of North American species of *Baccharis* (18 in number) is given. Three new genera are described, all *Compositæ*; *Plummera*, from Southern Arizona, related to *Actinella* and named in honor of Mrs. J. E. Lemmon; *Dugesia*, from Northern Mexico and dedicated to Prof. Alfred Duges, a Mexican Zoologist; and *Hecastocleis*, from Nevada, a member of the *Mutisiaceæ*, and whose generic name alludes to the separate enclosure of each flower in its involucre.

A footnote informs us that the unequal insertion of the stamens will no longer serve to distinguish *Collomia* from *Gilia* and that hence Nuttall's *Collomia* must be remanded to the already large genus *Gilia*.—J. M. C.

Contributions to American Botany, by Sereno Watson; Proc. Am. Acad., Vol. XVII.—The larger part of this contribution is devoted to a list of the *Polypetalæ* from S. W. Texas and N. Mexico, collected chiefly by Dr. E. Palmer in 1879–80. The list is

a long one and includes over 50 new species. A synopsis of N. Am. *Desmanthus* is given, which shows 10 species.

The rest of the contribution contains the descriptions of new species, chiefly from our Western Territories. *Astragalus* receives 5 new species; *Eriogonum* 4; *Arabis*, *Caulanthus*, *Silene*, *Atriplex*, each 3; and *Myosurus*, *Claytonia*, *Arenaria*, *Malaxtrum* (one from Florida), *Lupinus*, *Dalea*, *Sedum*, *Cotyledon*, *Œnothera*, *Allium*, each 2. The distinguishing characters of our four species of *Physaria* are given. *Lupinus Plattensis* is the specific name given to *L. ornatus*, Dougl., var. *glabratus*, Watson.

A discovery of special interest to eastern botanists and all those who use our eastern manuals is that of *Pedicularis Furbishiæ* on wet banks of the St. John's River, at Van Buren, Arostook Co., Maine, and extending along the river for sixty miles. This species is allied to *P. Canadensis* and *P. bracteosa* and is dedicated to its discoverer, Miss Kate Furbish, who has worked so successfully among the plants of her native state.—J. M. C.

Native Trees of the Lower Wabash in Illinois and Indiana, by Robert Ridgway.—This is the substance of the title to a paper published in the Proceedings of the U. S. National Museum, and to the author we are much indebted for advance sheets. Mr. Ridgway has made a careful study of the trees of the Lower Wabash and White River Valleys, and with the help of Dr. J. Schneck, of Mt. Carmel, Ill., has made this a most interesting and valuable paper. If space permitted we would like to publish copious extracts from it, but in this notice will have to be content with a meager outline. The author aptly describes our Southern Indiana forests as distinguished from those of more eastern districts by the absence of coniferous trees and the great variety of species growing together. Our woods are most decidedly "mixed woods" and 40 to 50 species are given as growing indiscriminately upon areas of 50 to 75 acres.

In regard to size, many measurements were taken, showing a most liberal growth. At least 34 species of trees reach or exceed a height of 100 feet; no less than 11 reach a height of 150 feet; and the greatest height recorded was that of a *Liriodendron*, being 190 feet.

The paper contains a list of 92 species with very interesting notes, the longest being upon our Tulip tree, or "Poplar" (*Liriodendron tulipifera*), the most magnificent of our trees; the White Elm, or "Red Elm" (*Ulmus Americana*), with its spurs or buttresses at base and its parasite, the mistletoe; the Sycamore (*Platanus occidentalis*), the largest hardwood tree of North America, with greatest girth and most massive branches, in one case the measurement about the base being 42 feet, and reports of others much larger, even to 66 feet; the Bald Cypress (*Taxodium distichum*)

whose presence so far north can only be accounted for by the open and low north and south valley of the Wabash. The occurence of this last tree is so peculiar that a short extract from Mr. Ridgway's paper concerning it will be of interest.

It grows in the lower part of Knox County, Indiana, or that portion embraced between the Wabash and White Rivers and known as "The Neck." It is very abundant, the area embraced by the cypress swamps, and largely timbered with cypress, being estimated at 20,000 acres.

"Although known as the 'Cypress Swamp,' it consists of a series of beautiful, secluded ponds, hidden in the dense forest, and difficult of access by any one not familiar with the locality." "The cypress trees grow chiefly around the borders of these ponds and along the sloughs connecting them, as well as on the one which empties into the river. Being so near the river, into which the logs are floated at "high water," the finest trees have long since been destroyed, and there are very few left whose symmetry is not marred by low-growing branches or knots upon the trunks. The largest standing tree observed by me was a very old and exceedingly rough specimen, entirely unfit for lumber or shingles. The swollen base measured 45 feet in circumference at the ground, the girth immediately above the conical portion being 21 feet; the trunk consisted of several upright stems grown together for the greater part of their length, but in places distinct, with one very conspicuous transverse growth joining the two main stems, at a height of about 50 feet from the ground. The top expanded 94 feet, the greater part of it elevated over 100 feet from the ground. A solid stump, measuring 38 feet around at the ground, was 22 feet in girth at 8 feet; at about 15 feet it divided into two main trunks of equal size, which were cut off immediately above the fork, a scaffold being necessary for the purpose." "The tallest did not much exceed 140 feet, their average height being little, if any, over 100 feet; and even the finest of them would not compare for symmetry and length with the Sweet Gums and Ashes with which they were associated."—J. M. C.

Notes from S. Illinois.—While collecting parasitic fungi in Southern Illinois last Spring, I found on shelving rocks at Makanda, Jackson Co., a fungus on a species of *Œnothera*. The fungus (an *Uromyces* accompanied by an *Æcidium*) is probably a new species and the *Œnothera* is new to the Northern United States. The latter did not agree with any description in the Manual, and specimens were sent to Dr. Geo. Vasey who determined it to be *Œnothera linifolia*, Nutt. I found the same in a similar situation near Tunnel Hill, Johnson Co. It was plentiful in both localties. At the latter place I also found *Silene Virginica*, L., which was previously reported in Illinois only "on wooded banks of Desplaines

River near Chicago." *Dodecatheon Meadia*, L., var. *Frenchii*, Vasey, grows there at the base of overhanging cliffs. It is smaller than the usual form, has fewer flowers and thin ovate-cordate leaves on margined petioles, constituting a well-marked variety.—A. B. SEYMOUR.

The female Flowers of Coniferæ.—Professor Eichler's paper on this subject, reviewed in the May number of this Journal, has induced Professor CELAKOVSKY to re-investigate this subject, morphologically so important, and to which he had already devoted much attention. In the Abhandl. d. K. Boehm. Ges. d. Wiss. he has recently published his present views, in an extensive article, illustrated by a plate. After reviewing the different theories and explanations enunciated since Robert Brown's time, he dwells emphatically on the great importance of the study of the *anamorphoses* (as he calls those monstrosities which are the result ot retrograde metamorphosis, in contra-distinction to mere pathological alterations) and of the teachings they convey. He comes to the conclusion that these are a much safer guide than the microscopic study of the genesis of the organs, which has often misled those who too implicitly relied on its teachings. Investigating the anamorphoses of the Norway spruce, he finds the two lateral carpellary leaves distinctly indicated and more or less separated and developed. In more involved cases an anterior and then a posterior bract make their appearance; these, Professor Eichler had taken for a third and fourth lobe of his ligula. It must be stated here that normally the posterior bract is the third and the anterior the fourth in order. Celakovsky comes to the conclusion that, at least in *Abietineæ*, Eichler's theory (that the carpellary scale is a mere emergence or ligule of the bract) is quite wrong, and that Mohl's view (1871)*—that the carpellary scale of these plants consists of the two connate lowest leaves of an axillary, otherwise undeveloped, bud connate at their upper edge and producing the ovules on their back,— is amply vindicated by all known morphological facts and is antagonistic to none of them.

He further concedes that the same explanation may possibly be the true one for all conifers, and that all morphologists who have treated this question thus far, have, whatever their views, assumed a conformity in this respect in all the tribes of conifers, and a complete homology of their female organs. But he thinks

* It appears now that A. Braun has expressed the same view as early as 1842 in the French *Congres scientifique* at Strasburg, in the report of whose proceedings it is published. He often threw out such hints from the rich treasures of his investigations, but with characteristic modesty he gave them to science without urging them or claiming scientific property or priority in them.

that this is not necessarily so, and that Sachs' and Eichler's emergence or ligular theory may be true as to *Araucarieæ*, and that thus the cone of these plants is really and truly a single flower. In regard to *Taxodineæ* and *Cupressineæ* he is convinced that an inner fruit scale really exists, completely adnate to the bract and soon outgrowing it, but he does not venture to pronounce on its nature, because he thus far has no ocular demonstration of it through any anamorphosis.† Professor Celakovsky concludes that the arillus of *Taxaceæ* corresponds with the ligula of *Araucarieæ*. He speaks of the *terminal* position of the ovule in this tribe as of very little morphological importance, being really a lateral ovule pushed to the top of an axis.‡

It will be of interest to those who have been misled by contrary statements, to learn that O. Heer, the celebrated phyto-paleontologist, has shown that geologically *Abietineæ* and *Taxodineæ* are the oldest conifers now known, appearing already in the Carboniferous period, while *Araucarieæ* come up much later in the Trias and Jurassic formations. But relative geological age of the different tribes of plants is of much less importance for the appreciation of their degree of development and their position in the system than some suppose. Thus the *Cycadeæ*, the Phænogams most closely allied to the vascular cryptogams, are, as Professor Heer states, very uncertain in the Carboniferous, and make their decided appearance first in the Permian rocks; therefore much later than the higher developed conifers.—G. E. *in Am. Jour. Sci.*

Limits of Michigan Plants.—The distribution of plants along the Great Lakes is a subject of much interest. The equalizing influence of the Lakes upon the climate of Michigan and adjacent states has resulted apparently in bringing together the two extremes of the floras considerably north and south of them. The mild winters allow southern species to come in, while the cool summers are favorable to the growth of more northern species.

† The writer of this is in posession of a proliferous cone of *Sequoia gigantea* which seems to prove, not only that the fruit scale in this species (and consequently in the whole tribe) is homolgous with that of *Abietineæ*, in so far as it consists of leaves of an axillary shoot, yet that these leaves are not a single pair, but, as A. Braun has long ago suggested, in regard to *Cupressineæ*, that there is a number of leaves, laterally coordinate and connate, bearing a number of ovules on their back.

‡ It might be well to draw attention to the singular fact, that in the allied gymnospermous family of *Gnetaceæ*, the female flower (for such it is now assumed to be, the outer integument or utricle being considered as a two-leafed carpel) is always referred to as "terminal," whether single, double or triple, while a terminal organ can not be otherwise than single. The fact is that the female flowers are here axillary in the axils of one or more of the uppermost bracts, and, if single, are pushed to the top of the shoot.

This condition of things is seen especially along the east shore of Lake Michigan. The mild climate of this long strip of country bordering the lake renders profitable the growing of tender fruits, and has caused this "Fruit-belt" of Michigan to become widely known. The Fruit-belt is not only peculiar in its great production of peaches and berries but also to a certain extent in its botanical characteristics. Many species of plants seem to find the extreme limit of their range north or south in this belt. The following species are among those which appear to reach their limits at South Haven, Mich., fifty miles from the head of the Lake. Of course the limits as given here are only approximate, for north of South Haven there has been no complete work done on the lake shore. The interior of the state has been well studied however by C. F. Wheeler, E. F. Smith, and others, whose work is given in Wheeler & Smith's admirable catalogue of Michigan plants. For the south the GAZETTE's Indiana catalogue is often consulted.

Lycopodium complanatum,L., grows rarely at South Haven in old choppings. It evidently reaches its southern limits about the head of the Lake in Indiana. (*Ind. Cat.*)

Botrychium ternatum, Swtz., var. *dissectum*, Eaton, seems to reach its northern limits here, but var. *obliquum*, Eaton, extends farther north into the center of the state. These are not reported north of Southern Indiana in the Indiana catalogue, and do not occur in Wisconsin, according to G. D. Swezey's list.

Woodwardia angustifolia, Sm., occurs in very restricted quantity in a dense hemlock wood, along with *Goodyera repens* R. Br., *Chimaphila maculata*, Ph., *Chrysosplenium Americanum*, Schw., and the commoner *Lycopodiums*. This beautiful fern will soon disappear—as soon as the forests are removed. It is probably a survivor of the extensive swamps which once covered the state.

Phegopteris Dryopteris, Fee, occurs sparingly (*Mrs. Millington*). This is undoubtedly its southern limit in the West.

Stipa avenacea, L., and *Vilfa vaginaeflora*, Torr., seem to reach their northern limits here, although the latter occurs sparingly as far north as Lansing.

Juncus scirpoides, Lam., approaches its northern limit while *J. articulatus*, L., reaches its southern. *J. nodosus*, L., var. *megacephalus*, Torr., strays north along the shore, and occurs in the center of the state in Montcalm County (*Wheeler & Smith's Cat.*) *Clintonia borealis*, Raf., reaches its southern range at South Haven. The same is nearly true of *Cypripedium acaule*, Ait., which is rare at this point. It is reported from one locality in Northern Indiana.

Goodyera repens, R. Br., reaches about its southern limit here.

Potamogeton perfoliatus, L., var. *lanceolatus*, Robbins, occurs here, and northward to Petoskey (*C. F. Wheeler*).

Pinus Strobus, L., reaches its southern limit in the center of the state at Mason, near Lansing. It follows the Michigan Lake shore down into Indiana however. *P. Banksiana*, Lam., is common on light land as far south as the middle of the lower peninsula, and is then not known to occur again till we reach the head of the Lake, where it is quite abundant. It there reaches its southern limits.

Tsuga Canadensis, Carr., the hemlock spruce, reaches about its southern limits here, where it is the leading forest tree. It does not occur in Indiana.

Betula lutea, Mx. f., approaches its southern limits here. *B. papyracea*, Ait., occurs near the head of the Lake (*E. J. Hill*), probably its extreme southern limit.

Calamintha Clinopodium, Benth., also reaches its southern limits here. It is undoubtedly indigenous. ("Indigenous about the upper Great Lakes and elsewhere"—Gray's Man.)

Chimaphila maculata, Ph., approaches its northern limits at South Haven, although it occurs sparingly as far north as Ionia. (*Wheeler & Smith's Cat.*)

Vaccinium vacillans, Sol., the principal dry-land blue-berry of the upper Lake region, occurs occasionally as far south as the central part of Indiana (*Ind. Cat*). At South Haven it is the leading upland berry, from this point it seems to dwindle away to the south.

Artemisia Canadensis, Mx., probably follows the shores of the Lake generally. It occurs here in great abundance, and at the head of the Lake (*E. J. Hill*), probably its southern range.

Solidago Virga-aurea, L., var. *humilis*, Gray, follows the Lake shore southward to this place. It is not known to occur farther south.

Cornus Canadensis, L., occurs in abundance, and strays as far south as central Indiana (*Ind. Cat.*), apparently far beyond its usual range.

Aralia hispida, Mx., reaches its southern limit in the West at South Haven where it is abundant. *A. quinquefolia* Decs. & Planch., also occurs, but is very rare.

Opuntia Rafinesquii, Englm., seems to prefer the sheltered interior to the Lake shores. It occurs as far north as the center of the lower peninsula (*Wheeler & Smith's Cat*).

Prunus Pennsylvanica, L., approaches its southern limits here, while *P. serotina*, Ehr., takes its place, and begins to approach its northern limits, although it occurs considerably farther north toward the center of the state.

Phaseolus diversifolius, Pers., probably reaches here, its northern limits as also *Linum Virginianum*, L.

Hibiscus Moscheutos, L., occurs here, the only known locality in Western Michigan. It also occurs near the head of the Lake in Indiana (*E. J. Hill*), and at Put-in-Bay, Lake Erie (*Wheeler & Smith*). It probably follows near the lower Great Lakes generally.

Hypericum pyramidatum, Ait., occurs but is very rare. Its range seems to be north.

Other lists of Michigan Lake Shore plants were published in the GAZETTE for July and August, 1880, and from Rev. E. J. Hill in Sept. 1881.—L. H. BAILEY, Jr.

Notes from Mount LaFayette, N. H.—I have been spending the summer in Franconia, N. H. While there I collected extensively both in the valley and the mountains. Moreover, I undertook to keep a list of all plants which I recognized in passing over the roads, either on foot or when driving. I am now tabulating results and find them quite interesting, as much for the conspicuous deficiencies in certain common genera, as in the presence of unusual species.

I spent one day on Mount LaFayette, something over 5,000 feet in altitude, and collected many alpines in the short time allowed on the summit. It may interest those who live in lowlands to read the names even of these fascinating boreal species. I did not pay much attention to the plants of the lower part of the mountain, except to note their change of form as I ascended. *Solidago thyrsoidea*, E. Meyer, was in its glory, and I think as handsome as the sea-side *S. sempervirens*, L. It grew several feet in height, up to an altitude of over 4,000 feet, intruding even into the peculiar dwarf forest of that region. Here I began to find *Vaccinium Vitis-Idæa*, L., in fruit (Aug. 10th). *Chiogenes hispidula*, Torr. & Gr., was very abundant, also fruiting.

After leaving the dwarf forest the path became very rough with loose, jagged stones, and there were no trees except the flat and spreading *Salix Cutleri*, Tuck. Here I began to find the peculiar alpine sedges, *Carex rigida*, Good., etc.; *Poa laxa*, Haenke, *Hierochloa borealis* Roem. & Sch., and *Aira atropurpurea*, Wahl. The most conspicuous flower by all odds was the tufted and showy *Arenaria Grœnlandica*, Fenzl., which bears here the curious local name of "mountain daisy." An unfortunate misnomer! I found large bunches of *Diapensia Lapponica*, L., in fruit, but missed my old friends *Cassiope hypnoides*, Don., and *Phyllodoce taxifolia*, Salisb., so charming on Mt. Washington. The pretty *Loiseleuria procumbens*, Desv., was in fruit. I had the good fortune to find *Geum radiatum*, Michx, var. *Peckii*, Gr., in splendid shape and very abundant, as was also the dwarf golden-rod, *Solidago Virga-aurea*, L., var. *alpina*, Bigel. I collected large quantities of this and of

Nabalus nanus, DC. My other finds so far determined were *Juncus trifidus*, L., *Scirpus cæspitosus*, L., and *Lycopodium Selago*, L. I looked longingly down upon the little "Lake of the Clouds," bestudded with yellow pond lilies, but there was not time to explore it. I have no doubt that an hour would have revealed many other precious things. As it was, I collected between bites of my luncheon and in a high wind. And here let me put in a plea for the much berated *vasculum*. I brought back my specimens fresh and unrumpled which were afterwards carefully pressed by my wife. She agrees with me in the conviction that with a portfolio we would have spoiled half of them. A frisky mountain breeze hardly allows of the manipulation of papers. With a box, too, one can collect more rapidly.

I was much interested in the intrusion of low valley plants into high regions. *Veratrum viride*, Ait., grew at an altitude of over 3,000 feet above the sea with unusual vigor, though it appeared to be sterile. On the very summit of the mountain, mingled with the alpine vegetation, grew *Spiræa salicifolia*, L., and *Thalictrum Cornuti*, L. What was not so strange, *Ledum latifolium*, Ait., approached nearly to the summit.

I shall not soon forget my day of alpine botanizing, with all New England mapped out at my feet.—W. W. Bailey, *Brown University*.

Immigrants.—It is important to note the arrival of recent immigrants which are either indigenous to this country, or are naturalized from abroad. It is an important auxiliary to the study of plant distribution. The following, not mentioned in our manuals, are naturalized in Michigan:

Dianthus furcatus, Balb., abundantly naturalized on the extensive grounds of the Agricultural College, Lansing; also at South Haven. This is a pretty perennial with red flowers $\frac{3}{4}$ inch in diameter. It forms dense mats on lawns and old pastures, its furcate stems ascending about a foot high. Petals crenate, dotted with white; calyx bracts awl pointed, $\frac{1}{4}$ the length of the calyx tube. A native of Northern Italy. *D. Armeria*, L., occurs at Lansing, and E. F. Smith reports it from Clinton county.

A form of *Cerastium arvense*, is thoroughly established on the College grounds. It is evidently var. *Andrewsii*, Syme., described by Hooker as having "leaves rigid, glabrescent, midrib strong below, flowers subsolitary." It forms dense mats which, when closely mowed, are hardly distinguishable from the sod. Flowers often $\frac{3}{4}$ inch in diameter, pretty.

Tragopogon pratensis, L., the English Goat's Beard, occurs at South Haven and Irving, Barry Co. Mr. F. H. Tuthill reports it from Kalamazoo, and C. F. Wheeler from Hubbarston, Ionia Co.

It is distinguished from Salsify, *T. porrifolius*, chiefly by its yellow flowers. The root is edible.

Crepis virens, L., occurs on the College grounds, Lansing, where it has flourished for at least three years. It is a very ordinary looking composite of the suborder Liguliflorae, specifically characterized as follows: "Glabrous below, lower leaves toothed runcinate or lyrate, upper linear sagittate, inner bracts glabrous within, as long as the pappus, in one row. Waste and cultivated ground, cottage roofs, etc. Fls. yellow, June–Sept. Annual, very variable. Stems 1–3 ft, furrowed, much branched; inflorescens usually glandular hairy. Heads $\frac{1}{4}$–$\frac{3}{4}$ in. diam., campanulate; outer bracts subulate, inner linear. Fruit red-brown, ribs 10 or more, smooth."—*Hooker, Stud. Fl.*

Veronica Chamædrys, L., the Germander Speedwell of Enggland, is common on the College grounds along with *V. officinaisl* and *Thymus Serpyllum*, all of which are thoroughly established. Hooker describes it as "hairy, stem pubescent on opposite sides, leaves subsessile, ovate–cordate, deeply serrate, pedicels slender, axillary, raceme long, lax; capsule obcordate, shorter than the calyx; fls. blue."

Polygonum Hartwrightii, Gray, is reported from Kalamazoo. For note and description see GAZETTE for February, 1876.

Amarantus blitoides, Watson, occurs on the beach of Lake Michigan at South Haven. This peculiar amaranth has very much the appearance of purslane at a little distance. It was first detected as a distinct species by Dr. Bessey who sent specimens from Iowa to Prof. Watson. It was at first thought to be a variety of *A. albus* and was later mistaken for *A. blitum* of Europe. Mr. H. N. Patterson, of Oquawka, Ill., kindly furnishes the following description and notes:

Amarantus (Pyxidium) *blitoides*, S. Watson. (Proc. Am. Acad. XII, 273, 1876.) Prostrate or decumbent, the slender stems becoming a foot or two long, glabrous or nearly so; leaves broadly spatulate to narrowly oblanceolate, attenuate to a slender petiole, an inch long or usually less; flowers in small contracted axillary spikelets; bracts nearly equal, ovate-oblong, shortly acuminate, 1 to $1\frac{1}{2}$ lines long, little exceeding the oblong, obtuse and mucronulate or acute sepals; utricle not rugose, slightly longer than the sepals; seed nearly a line broad. Frequent in the valleys and plains of the interior from Mexico to Northern Nevada and Iowa, and becoming introduced in some of the Northern States eastward. Mr. Patterson adds: "It grows all through Northern Illinois, especially along railroads. I think it is not truly indigenous in this state, but has come in lately."—L. H. BAILEY, JR., *Lansing, Mich.*

Malvastrum angustum, Gray.—Has any botanist ever observed cleistogamy in this plant? While exploring a tract of high rocky ground east of this place the sixth of July, I discovered some twenty specimens of this rare species, most all of which bore seed on the lower branches. But as there were buds not yet expanded upon the top and upper branches, I deferred collecting until the next day, supposing the buds would open and the petals expand. But day after day went by, and as the carpels commenced to form, the corolla withered and remained upon the top of the carpels. Upon being wetted, the petals showed no signs of having dehisced.

Owing to scant material I cannot be sure that my observations were of any worth.

If any other collector can enlighten me on this point I will be very thankful.

From the simple fact that all of my exchanges have only fruited specimens, I would infer that they have never seen the flowers.—FRANK BUSH, *Independence, Mo.*

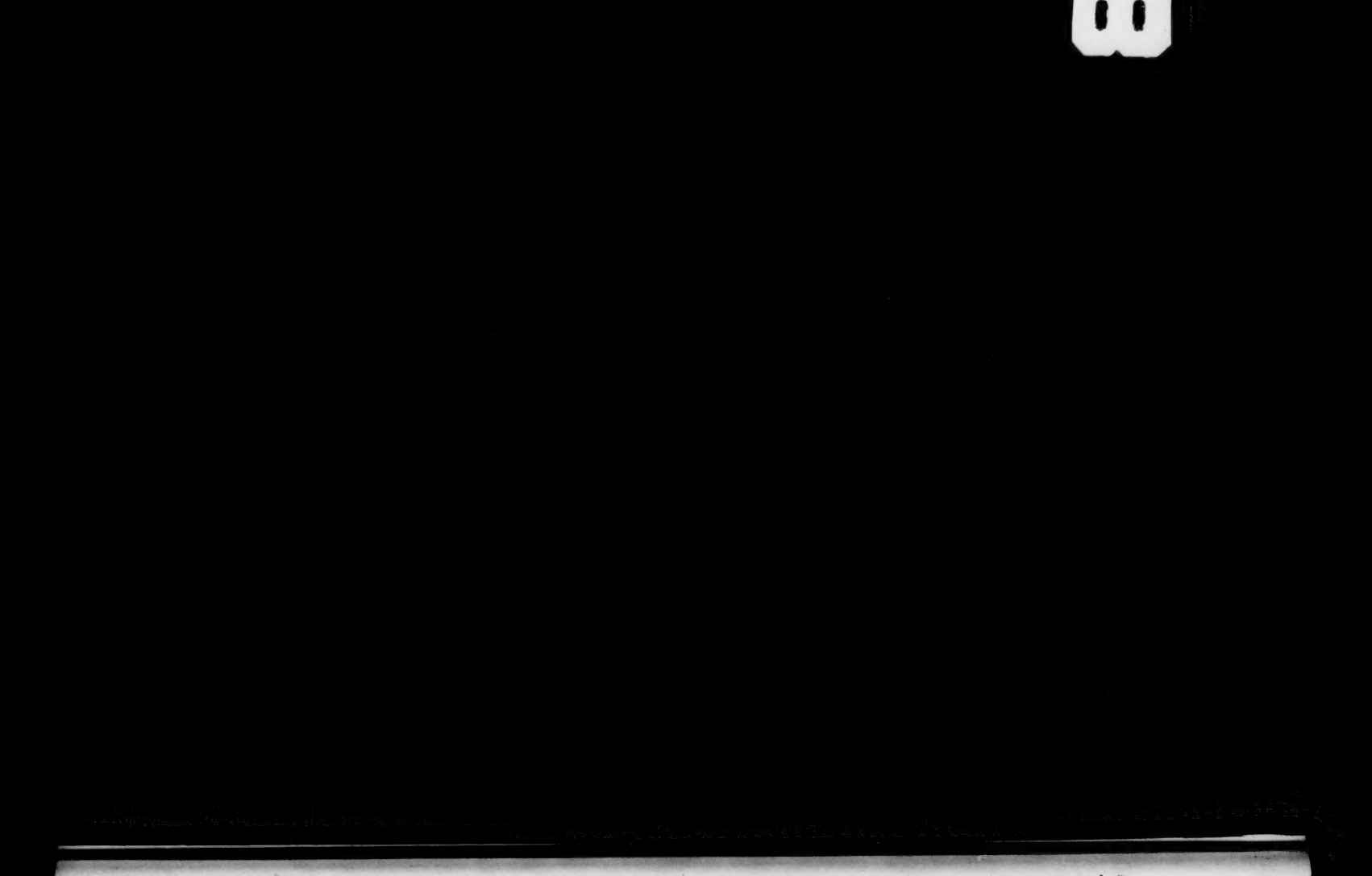
Some Notes on Physostegia Virginiana.—An idle hour on the prairie lands of Northern Indiana brought me face to face with acres of this beautiful "False Dragon-head," in full bloom, and I wondered what could be learned of its life in such a causal interview. Nothing can be more graceful than its spikes of rose-colored flowers, but the great variability of its leaves showed what a puzzle to the amateur botanist some of the extreme forms would be, if isolated. In many cases the leaves were very small, linear, and entire. But very soon a new feature attracted me with all the interest of a discovery, for in some way I had never associated it with *Physostegia.* The flowers were strikingly cataleptic, for the slightest touch upon one would push it from its normal position and there it would stay; and so it could be turned indefinitely upon its pedicel, standing quietly in any position within the range of more than half a circle. All the flowers of a thick cluster can thus be thrown toward any side of the stem. A consultation of Gray's Fl. N. Am. shows that this character is attributed to the whole genus. Its object was suggested by seeing a very natural result of this mechanism. A slight breeze, accompanied by a dash of rain, suddenly sprang up, and every flower veered about, like a most sensitive weather-vane, leaving only the back exposed to the wind and rain. The horizontal position of the flowers and their widely opened tubes would have permitted half of them to be filled with water had they not so quickly shifted their direction.

This observation led to a thought as to the method of securing cross-fertilization in this species. The long style rises among the four stamens along the upper part of the swollen tube, being attached to it by an entanglement of hairs, the stigma lying close

against the arching upper lip, while the stamens bend forward and are introrse. The mouth of the tube is so large, that no insects smaller than the humble bees could have touched the pollen, and numbers of them were observed busily at work. The pollen was so ripe and the stigmas apparently so immature, that it looked suspiciously like a case of proterandry, but as only the one condition could be found, this was left as a mere suspicion. Perhaps other observers have decided it.

But for a fine illustration of cataleptic flowers let me commend *Physostegia* to our teaching botanists.—J. M. C.

Mimulus dentatus, Nutt.—Having until recently only a solitary incomplete specimen of this, of Nuttall's collection, I referred it with some doubt to the *M. luteus*, var. *alpinus*, in the Synoptical Flora. But in June last, Mr. Rattan found a plant, exactly like Nuttall's, in Northern California, in the forests of Humboldt and Del Norte counties, where it abounds. It is a good species, which should stand, as I have stated, between *M. luteus*, var. *alpinus* and *M. moschatus*, var. *longiflorus*, the calyx rather that of the latter, and quite unlike that of the former. But now Mrs. Austin sends from Lassan's Peak, a var. *gracilis* of the same, smaller in all its parts, with leaves rather denticulate than dentate, and still more approaching the long-flowered form of *M. moschatus*, but almost glabrous.—A. GRAY.

Linnæa borealis is found by Mrs. Anthony, of Gouverneur, New York, occasionally to produce 3-flowered and 4-flowered peduncles. In the four flowered specimens sent to us the axis of the peduncle is continued beyond the fork for a short distance, and then bears the additional pair of pedicels. Attention being thus called to it, I find 4-flowered specimens in our herbarium, collected long ago by the late Mr. Oakes.—A. GRAY.

Teratological Note.—I found a flower of *Lathyrus palustris*, L., having the ovary divided as far as the middle, having a style for each division. There were 14 stamens, one of which occupied the usual position above the ovary while the rest were united; but the free end of the filaments were separated into two lots, one of 7 and another of 6 to occupy respectively two keels perfect in shape and distinct from one another. On the outer side of either keel were attached slightly the two wings. The standard was very broad. The calyx had the usual two small upper teeth, but there were five instead of three longer teeth beneath. Those who have studied this flower know that both sides of the keel are incurved thus retaining the stamens while the hairy surface on the inner side of the flat style carries out the pollen, at the same time giving to and receiving from the insects the pollen necessary for cross-fertilization. All these arrangements were left uninjured by the strange multiplication of parts.—A. F. FOERSTE, *Dayton, O.*